REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 1-17 are presented for consideration. Claims 1, 13 and 15-17 are independent. Claim 1 has been amended to clarify features of the present invention, while claim 17 has been added to recite additional features of the subject invention. Support for these changes and this claim can be found in the original application, as filed. Therefore, no new matter has been added.

Applicant notes that the Examiner has made final the restriction requirement previously set forth. Claims 13-16, withdrawn from consideration, have been retained in this application in order to preserve Applicant's rights. Applicant requests that the Examiner contact his undersigned representative should it be necessary to cancel these claims in order to advance the subject application to issue.

Applicant requests favorable reconsideration and withdrawal of the rejection set forth in the above-noted Office Action.

Claims 1-12 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,526,093 to Takahashi. Applicant submits that this patent does not teach many features of the present invention as previously recited in these claims. Therefore, this rejection is respectfully traversed. Nevertheless, Applicant submits that independent claims 1 and 17, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the invention, independent claim 1 recites an exposure apparatus for sequentially performing projection exposure via a projection optical unit of device patterns provided in a pattern effective area of a photo-mask onto shot areas of a wafer. The apparatus includes an illumination unit for collectively illuminating the entire pattern effective area of the photo-mask contained within an illumination range with exposure light, a mask stage that moves the photo-mask in the mask scanning direction within the illumination range, a wafer stage that moves the wafer in accordance with a projection range in which the pattern effective area of the photo-mask is projected in one of the mask scanning direction and a direction opposite to the mask scanning direction, and control means. The control means synchronizes and controls the relative movements of the mask stage and the wafer stage, while keeping an entire shot area of the wafer contained within the projection range. Device patterns illuminated collectively are projected via the projection optical unit.

In another aspect of the invention, independent claim 17 recites an exposure method for sequentially performing exposure of device patterns provided in a pattern effective area of a photo-mask onto shot areas of a wafer. The method includes a step of collectively illuminating device patterns provided in a pattern effective area of a photo-mask and a step of synchronizing and controlling the relative movements of a mask stage and a wafer stage, while keeping an entire one shot area of the wafer contained within the projection range in which device patterns illuminated collectively are projected via the projection optical unit.

By such an arrangement, the present invention makes it possible to move the wafer at a constant velocity and to expose, for example, one line (or one column) in the moving

direction on the wafer. It is, therefore, not necessary to perform acceleration controlling and slow-down controlling in each shot area. Thereby, the present invention can achieve high exposure output.

Applicant submits that the cited art does not teach or suggest such features of the present invention as recited in independent claims 1 and 17.

The Takahashi patent teaches a step and scan type exposure apparatus, as opposed to a projection type exposure apparatus, in the manner of the invention.

In the Takahashi patent, a reticle 7 and a wafer 9 are scanned by slit-shaped exposure light, as shown in Figures 2 and 3 of that patent. Further, a pattern of the reticle 7 is transferred onto the wafer. In that patent, the slit-shaped exposure light illuminates the pattern of the reticle 7 only partially. Because the pattern of the reticle 7 is scanned by the slit-shaped exposure light, the exposure light is not collectively illuminated onto the entire pattern of the reticle 7, in the manner of the present invention recited in independent claims 1 and 17. Accordingly, Applicant submits that the arrangement in the Takahashi patent and that recited in independent claims 1 and 17 are in marked contrast.

Still further, in the Takashi patent, a reticle stage 44 and a wafer stage 42 are moved at a constant speed, as is discussed at column 4, lines 12-13, of that patent, in order to expose the partial pattern of the reticle 7 onto a one-shot area (for example, 9a, shown in Figure 2) of the wafer 9. In order to achieve constant speed, however, in that patent, acceleration and slow-down controlling are necessary for each shot area to be scanned based on the slit-shaped exposure light. By repeating the stepping motion and the scanning exposure, the pattern on the reticle 7 is transferred onto the entire exposure area of the wafer 9. Thus,

Applicant further submits that the arrangement in the Takahashi and that of the present invention are different with respect to the relative movements between the mask stage and the wafer stage.

Still further, Applicant submits that the Takahashi patent is silent with respect to the control means or step in the present invention recited in independent claims 1 and 17. Specifically, the Takahashi patent does not teach or suggest keeping an entire one shot area of a wafer contained within a projection range in which device patterns illuminated collectively are projected via a projection optical unit, in the manner of the present invention recited in those independent claims.

In summary, therefore, the arrangement in the Takahashi patent relates to a step and scan type exposure apparatus, which is remote from the projection type exposure method and apparatus of the present invention recited in independent claims 1 and 17. For the reasons noted above, Applicant submits that the Takahashi patent does not teach or suggest the salient features of Applicant's present invention, as recited in those claims.

For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 1 and 17, is patentably defined over the cited art, whether that art is taken individually or in combination.

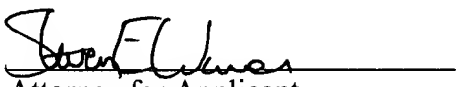
Dependent claims 2-12 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in independent claim 1. Further individual consideration of these dependent claims is requested.

Applicant submits that this Amendment After Final Rejection clearly places this application in condition for allowance. This Amendment was not earlier presented because Applicant believed that the prior Amendment placed the application in condition for allowance. Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 CFR 1.116.

Applicant also requests favorable reconsideration, withdrawal of the rejection set forth in the above-noted Office Action and an early Notice of Allowance of this application.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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